## REMARKS

### I. Status of the claims

Claims 29-43 are currently pending. Claims 44-59 have been withdrawn. No claims have been amended by this response.

### II. Restriction Requirement

Applicants note that the Restriction Requirement has been made final. Applicants respectfully remind the Examiner that if the elected species is found allowable, then continued examination of the full scope of claims to the extent necessary to determine the patentability of these pending claims, i.e., extending the search to a reasonable number of the non-elected species is required according to M.P.E.P. § 803.02 and 35 U.S.C. § 121.

### III. Rejections Under 35 U.S.C. § 112

The Examiner has rejected claims 29-43 under 35 U.S.C. § 112, second paragraph, as allegedly "indefinite for failing to particularly point our and distinctly claim the subject matter which applicant regards as the invention." Office Action at page 2. The Examiner states that while claims 29, 42, and 43 recite "a pump radiation at a wavelength $\lambda_p$," they do not specify the value of the wavelength in nanometers. *Id.* Applicants respectfully disagree with the rejection.

The M.P.E.P. states that "[i]n reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore,

serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent." M.P.E.P. § 2173.02. Applicants respectfully submit that the present claims are definite because they clearly apprise one skilled in the art of their scope. The present claims clearly recite raman amplifiers comprising at least one optical fiber and at least one pump laser. The claim recite that the pump laser is adapted for emitting a pump radiation at a wavelength $\lambda_p$. In other words, the pump laser can be adjusted to change the wavelength of the radiation being emitted. The value of the wavelength in nanometers does not define the invention; it is not necessary to apprise one of ordinary skill in the art of the scope of the claim. In fact, one of ordinary skill in the art would understand that the value of the wavelength is related to the signal radiation wavelengths. As the present specification states, "[t]he radiation emitted by the pump lasers . . . is related to the signal radiation wavelengths: in order to have Raman amplification, the wavelength of the pump lasers should be shifted with respect to the signal radiation wavelengths in a lower wavelength region of the spectrum, such shift being equal to the Raman shift . . . of the material comprised in the core of the fiber . . . for at least one signal radiation wavelength." *See* specification at page 13, line 30 to page 14, line 2. Accordingly, a person of ordinary skill in the art would expect the pump laser to be adjustable, as needed, and would be defined in-part by the composition of the optical fiber, which is selected from the family recited in the claims.

Thus, the present claims, as currently pending, clearly and definitely define the invention to one of ordinary skill in the art. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

## IV. Rejection Under 35 U.S.C. § 103

The Examiner has rejected claims 29-31 and 35-43 under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 6,194,334 to Aitken et al. ("Aitken") in view of U.S. Patent No. 6,771,414 to Masuda ("Masuda") for the reasons disclosed on pages 3-4 of the Office Action. Applicants respectfully disagree and traverse this rejection for at least the following reasons.

The Examiner asserts that Aitken discloses a tellurite glass having a composition of 10-90% tellurite, at least 5% $WO_3$, and 0-30% of a modifying oxide of Nb. Office Action at page 3. The Examiner acknowledges that Aitken does not disclose that the glass is part of an optical fiber in a Raman amplifier comprising at least one pump laser optically coupled to the optical fiber. *Id.* The Examiner further asserts that Masuda teaches a Raman amplifier comprising at least one tellurite optical fiber and at least one pump optically coupled to the optical fiber. *Id.* The Examiner asserts that it would have been obvious to one skilled in the art "to produce the glass composition of Aitken, in the optical fiber and Raman amplifier of Masuda, for the purpose of broadening the amplifier spectrum." *Id.* at page 4.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. M.P.E.P. § 2143.01. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Furthermore, a *prima facie* case of obviousness cannot

be established where the proposed modification would change the principle of operation of the prior art invention being modified. M.P.E.P. § 2143.01; *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959).

**A. Lack of Motivation**

As explained above, obviousness can only be established where there is some teaching or suggestion in the references to modify or combine the teachings. M.P.E.P. § 2143.01. Applicants respectfully submit that there is no such teaching or modification in the references of record.

The Examiner asserts that Aitken discloses a tellurite glass composition comprising 10-90% tellurite, at least 5% $WO_3$, and 0-30% of a modifying oxide of Nb. Office Action at page 3. Aitken, however, does not specifically disclose such a composition. Aitken teaches a family of glasses that "consist essentially of, as calculated in mole percent; 10-90% $TeO_2$, at least 5% $WO_3$, and at least 5% $R_2O$, where R is Li, Na, K, Rb, Cs and or Tl, and mixtures." Aitken at col. 2, lines 40-44. Aitken further teaches that the glass composition can be modified "to alter the physical properties of glasses." *Id.* at col. 4, lines 45-46. "The modifying oxides may include 0-30% MO where M is Mg, Ca, Sr, Ba, Zn, Cd, Pb, Y, La, Gd, Lu, Ti, Zr, Hf, Nb, Ta, Bi, H, B and/or P." *Id.* at col. 4, lines 54-56.

Applicants submit there is no motivation to make the various, necessary selections to modify the teachings of Aitken to reach the claimed optical fiber composition. First, there is no teaching or suggestion why one or ordinary skill in the art would have modified the glass composition of Aitken with one of the modifying oxides. Second, there is no teaching or suggestion why one of ordinary skill in the art would

have been motivated to use Nb as the modifying oxide. As the M.P.E.P. teaches, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)) (emphasis in original).

The Examiner asserts that the use of the glass composition of Aitken in the optical fiber and Raman amplifier of Masuda would have been obvious to one of ordinary skill in the art "for the purpose of broadening the amplifier spectrum." Office Action at page 4. Applicants respectfully disagree. First, the Examiner has cited no evidence that the addition of NB or any of the modifying oxides would "broaden the amplifier spectrum." Second, Masuda cannot provide the motivation since it does not disclose the tellurite glass identified by the Examiner. Masuda does not even disclose tellurite glasses comprising Nb. See col. 6, lines 1-6. Third, Aitken also cannot provide the motivation, since it expressly states that the modifying oxides only "alter the **physical** properties . . . [in particular] for the purpose of providing combinations of core and cladding glasses." Col. 4, lines 45-46 (emphasis added). The only optical property suggested by Aitken is refractive index. Col. 4, line 51. Aitken explicitly states that "it is desirable that the core and cladding glasses have properties as near identical as possible." Col. 4, lines 51-53. Thus, based on the teachings of Aitken, one of ordinary skill in the art would expect that modifying the base composition by adding Nb oxide would not change the physical properties other than the refractive index.

Because the combination of references does not suggest the desirability of using a Nb oxide in the glass composition, a *prima facie* case of obviousness has not been

established. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

**B. Change in the Principle of Operation**

The Examiner asserts that the use of the glass composition of Aitken in the optical fiber and Raman amplifier of Masuda would have been obvious to one of ordinary skill in the art "for the purpose of broadening the amplifier spectrum." Office Action at page 4. Applicants respectfully disagree. As noted above, if the Examiner proposed modification changes the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims obvious. M.P.E.P. § 2143.01.

As noted by the Examiner, the disclosure of Masuda is also directed to broadening the spectrum of the amplifier. *See* Masuda at col. 2, lines 28-32. To broaden the spectrum of the amplifier, however, Masuda teaches combining more than one gain spectrum to yield a wideband and flat gain spectrum. *Id.* Masuda teaches several methods for combining more than one gain spectrum, including the use of multiple fibers and/or multiple pump light beams. *See id.* at col. 7, line 33 to col. 27, line 59. In contrast, the Examiner has suggested that use of Aitken's specific compositions of tellurite glass for broadening the spectrum.

The combination asserted by the Examiner would change the principle of operation of the Raman amplifier of Masuda because Masuda uses multiple optical fibers and/or light pumps to broaden the spectrum of the amplifier and not the selection of a tellurite glass with Nb oxide. Modifying the optical fiber of Masuda to use the glass composition of Aitken would not have been obvious to one of ordinary skill in the art

because doing so would change the principle of operation of the Raman amplifier of Masuda by destroying the purpose of combining multiple gain spectrums.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

## V. Conclusion

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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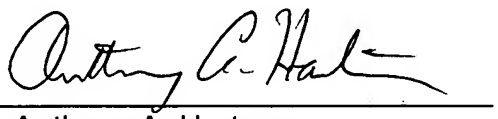
By: 

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